

2.3 Solving Rational & Radical Equations in One Variable 2017-18

Name _____ Date _____ Period _____

Solve the equation algebraically. State the restrictions on #1-8 and identify any extraneous solutions.
Show work!

1. $\frac{x-2}{3} + \frac{x+5}{3} = \frac{1}{3}$

2. $x + \frac{4x}{x-3} = \frac{12}{x-3}$

3. $x + \frac{12}{x} = 7$

4. $\frac{3x}{x+5} + \frac{1}{x-2} = \frac{7}{x^2+3x-10}$

5. $\frac{3}{x+2} + \frac{6}{x^2+2x} = \frac{3-x}{x}$

6. $\frac{x^2-2x+1}{x+5} = 0$

7. $2 - \frac{1}{x+1} = \frac{1}{x^2+x}$

8. $\frac{2}{x-1} + x = 5$

Solve each radical equation. State the restrictions on #9-16. Show work!

9. $\sqrt{4x+1}-5=0$

10. $\sqrt{2x+3}-7=0$

11. $5-2\sqrt{x}=3$

12. $\sqrt[3]{x}+3=2$

13. $2\sqrt[5]{31x+25}-7=3$

14. $\sqrt{x^2+3}=x+1$

15. $\sqrt{5x+4}-\sqrt{x}=2$

16. $\sqrt{4x-23}-3=2$

17. $2(x+3)^{\frac{2}{3}}=8$

18. $(x+1)^{\frac{3}{2}}-2=25$

$$19. (x+3)^{\frac{1}{2}} - 1 = x$$

$$20. (2x)^{\frac{1}{2}} = (x+5)^{\frac{1}{2}}$$

$$21. (x-4)^{\frac{2}{3}} = 5$$

$$22. 3(x-2)^{\frac{3}{4}} = 24$$

$$23. 2(x-1)^{\frac{4}{3}} + 4 = 36$$

$$24. 2(2x)^{\frac{1}{3}} + 1 = 5$$

Review Exercises

Simplify each rational expression. Hint: Factor

$$25. \frac{x^2 - 4}{x^3 + 8}$$

$$26. \frac{2x^2}{8y} \cdot \frac{2y^2}{16x^3}$$

$$27. \frac{4z^2}{8y} \div \frac{2z^4}{16y^3}$$

$$28. \frac{4z^2}{8y} + \frac{3z^2y^2 + 1}{16y^3}$$

$$29. \frac{3}{x^2 + x - 6} - \frac{x}{x + 3}$$